

The claims of the invention are:

1. A non-invasive optical method for diagnosing internal bleeding or hemorrhage in a human body by detecting leaked blood comprising: administering a fluorescent compound parenterally; providing a light source having a light beam, wherein said light beam contains a wavelength absorbable by said fluorescent compound, wherein said light beam is illuminated at and transmitted through a tissue region into said human body; and after administering said fluorescent compound for a few minutes, analyzing a fluorescence signal produced from said fluorescent compound in said leaked blood for diagnosing the presence or absence of internal bleeding in said human body.
2. The method of claim 1, wherein said leaked blood is selected from a group consisting of internal bleeding for gynecology, obstetrics, neonatology, surgery bleeding, post-surgery bleeding, emergency medicine, and veterinary medicine.
3. The method of claim 1, wherein said tissue region in the human body is selected from a group consisting of vaginal canal, posterior fornix of vaginal wall, cervical region, rectum, frontal fontanel, occipital fontanel, and other relatively thin layer of human tissue.
4. The method of claim 1, wherein said light source has a wavelength between 400 nm and 800 nm.
5. The method of claim 1, wherein said fluorescence signal has a wavelength between 500 nm and 950 nm.
6. The method of claim 1, wherein said fluorescent compound has a dosage effective for producing the fluorescence signal.
7. The method of claim 6, wherein said dosage is in the range between 0.1 mg/kg and 10 mg/kg.
8. The method of claim 1, wherein said light source is a laser.
9. The method of claim 1, wherein said fluorescent compound is indocyanine green.
10. The method of claim 1, wherein said fluorescence signal is either an image or a spectral signal.
11. A non-invasive optical device for diagnosing internal bleeding in human body by detecting leaked blood comprising: a fluorescent compound administered parenterally, but not limited to intravenous injection; a light source having a light beam, wherein said

light beam contains a wavelength absorbable by said fluorescent compound, wherein said light beam is illuminated at and transmitted through a tissue region into said human body; and fluorescence detection means for analyzing a fluorescence signal produced from said fluorescent compound in said leaked blood for diagnosing the presence or absence of internal bleeding in said human body.

12. The device of claim 11, wherein said leaked blood is selected from a group consisting of internal bleeding for, but not limited to, gynecology, obstetrics, neonatology, surgery bleeding, post-surgery bleeding, emergency medicine, and veterinary medicine.
13. The device of claim 11, wherein said tissue region in the human body is selected from a group consisting of vaginal canal, posterior fornix of vaginal wall, cervical region, rectum, frontal fontanel, occipital fontanel, and other relatively thin layer of human tissue.
14. The device of claim 11, wherein said light source has a wavelength between 400 nm and 800 nm.
15. The device of claim 11, wherein said fluorescence signal has a wavelength between 500 nm and 950 nm.
16. The device of claim 11, wherein said fluorescent compound has a dosage effective for producing the fluorescence signal detectable by the fluorescence detection means.
17. The device of claim 16, wherein said dosage is in the range between 0.1 mg/kg and 10 mg/kg.
18. The device of claim 11, wherein said light source is a laser.
19. The device of claim 11, wherein said fluorescent compound is indocyanine green.
20. The device of claim 11, wherein said fluorescence signal is either an image or a spectral signal.
21. The device of claim 11, wherein said light beam is guided with at least one optical fiber.
22. The device of claim 11, wherein said fluorescence detection means comprises at least one optical filter or optical grating.